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Pulmonary Hypertension and Venous Thrombo-embolic Disease

RIGHT VENTRICULAR ADAPTATION VERSUS ADVERSE REMODELING IN PULMONARY HYPERTENSION: INSIGHTS FROM 3D ECHOCARDIOGRAPHIC-INVASIVE HEMODYNAMIC ANALYSIS

Oral Contributions
Room 150 B
Sunday, March 30, 2014, 8:45 a.m.-9:00 a.m.

Session Title: Pulmonary Hypertension and Pulmonary Thromboembolic Disease Year in Review
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Background: Right ventricular (RV) dysfunction is of clinical importance for patients with pulmonary arterial hypertension (PAH), but it is difficult to assess.

Methods: We studied 103 subjects: 83 PAH patients and 20 normals with 3D echocardiography imaging (Toshiba Corp.) for RV global area tracking strain (G-AS), end-diastolic volume index (RVEDVI), end-systolic volume index (RVESVI) and ejection fraction (RVEF). Of PAH patients 74 (89%) had invasive hemodynamic data: systolic pressure (sPAP), pulmonary vascular resistance (PVR), stroke volume index (SVI). According to the regression curve of sPAP and RVESVI, PAH patients were divided into RV Compensated and RV Decompensated groups (RVESVI cut off value 110ml/m2).

Results: 3D RVEF and G-AS significantly correlated with sPAP (r=-0.60, p<0.001 and r=0.55, p<0.001, respectively). RV sPAP was significantly higher than normals in both RV Compensated and RV Decompensated groups (p<0.01). RVEDVI and RVESVI was significantly larger in RV compensated group vs. normal, but largest in RV decompensated group (p<0.01). RV global strain and RVEF progressively decreased from RV compensated to RV decompensated patients (p<0.01) (figure).

Conclusions: 3D echocardiographic RV volume and global strain analysis in PAH patients coupled with invasive hemodynamics demonstrated morphological subsets of RV compensation and RV decompensation which may have clinical implications.